



STANDARD OPERATING PROCEDURE

Department: Quality Control

SOP No.:

Title: Operation and Calibration of Polarimeter

Effective Date:

Supersedes: Nil

Review Date:

Issue Date:

Page No.:

1.0 OBJECTIVE:

To lay down a procedure for Operation and Calibration of Polarimeter.

2.0 SCOPE:

This procedure is applicable for Operation and Calibration of Polarimeter in the Quality Control Department.

3.0 RESPONSIBILITY:

Officer, Executive – Quality Control Department.

Head – Quality Control Department.

4.0 DEFINITION(S):

NA

5.0 PROCEDURE:

Make: Rudolph, Make: Autopol IV

5.1 Operation:

5.1.1 Before switching on the instrument check the sample chamber and make sure that there is no obstacle in the light path.

5.1.2 Switch on the instrument and wait for start up, during this time do not touch any keys, because it may affect the start up of the instrument.

5.1.3 Reset the readings to zero by pressing the 'ZERO' key.

5.1.4 Select Particular wavelength on which particular sample you want to measure by pressing ' λ ' key. Wait for few seconds & again press the 'ZERO' key.

5.1.5 Wash the sample cell with purified water.

5.1.6 Check optical rotation of the Blank, make the reading Zero.

5.1.7 Pour the sample into the sample cell and Rinse the same.

5.1.8 Fill the sample in the cell and place the same in the trough of the sample chamber, close the door and wait for the stable reading.



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5.1.9 Wait until the reading gets stabilized for Optical rotation of the sample and take the printout (optional) of the reading by pressing 'Print' key.

5.1.10 Remove the sample cell from the chamber and wait for Polarimetric balance.

5.1.11 Clean the sample chamber if there is any spillage.

5.1.12 Wash the sample cell with purified water.

Specific optical rotation for solid:

$$\text{SOR} = \frac{\text{Reading} \times 100}{\text{Length of tube X Concentration (\% w/v)}}$$

Specific optical rotation for liquids:

$$\text{SOR} = \frac{\text{Reading}}{\text{Length of tube X Specific Gravity of liquid}}$$

5.2 Calibration:

5.2.1 Switch on the system and wait until the system initialization. Let the system allow coming polarimetric balance. Press 'Zero' to make display to zero.

5.2.2 Prepare the solution of sucrose dried at 100°C for 1 hour having concentration 10%, 20%, 30%, 40%, 50% in distilled water.

5.2.3 Take reading of the solution at 25°C. Take average of five readings of individual for calculation.

5.2.4 Concentration of Solution	Angle of rotation
10%	13.33°
20%	26.61°
30%	39.86°
40%	53.06°
50%	66.23°

Tolerance + 0.02°

5.2.5 Frequency - Quarterly

5.2.6 If instrument is out of calibration, affix "UNDER MAINTENANCE" label on the instrument and call for service engineer.



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5.2.7 Note the Calibration activity in the instrument logbook.

5.3 Cleaning:

5.3.1 Wash the sample cell with purified water after analysis.

5.3.2 Clean the instrument properly with cotton cloth.

6.0 ABBREVIATION(S):

SOR – Specific Optical Rotation

QCD – Quality Control Department

7.0 REFERENCE(S):

NA

8.0 ANNEXURE(S):

Annexure – I: Calibration Record of Polarimeter.

9.0 REVISION CARD:

S.No.	REVISION No.	REVISION DATE	DETAILS OF REVISION	REASON (S) FOR REVISION



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ANNEXURE I

Calibration Record: Polarimeter			
Location		Model No.	
Make		Identification No.	
Calibration Done On		Calibration Due on	
Reference SOP No.:			Page No.: 4 of 1

Take 10 g, 20 g, 30 g, 40 g & 50 g of dried sucrose in 100 ml volumetric flask individual and dilute to 100 ml with distilled water respectively. Take reading of solution at 25°C in 2 dm tube. Take 5 reading of each concentration and take average reading as a final reading.

S.No.	Wt of Sucrose (in gm)	Conc. of Sucrose (In %)	Angle of rotation in degree						Angle of Rotation Limit
			1	2	3	4	5	Average	
1.									13.33° + 0.02
2.									26.61° + 0.02
3.									39.86° + 0.02
4.									53.06° + 0.02
5.									66.23° + 0.02

Remarks: The Instrument Calibration **complies / Does not comply.**

Calibrated By:	Checked By:
Date	Date